Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2017/2018

COURSE NAME	:	PHYTOCHEMISTRY
COURSE CODE	:	BWJ 32103
PROGRAMME CODE	:	BWW
EXAMINATION DATE	:	JUNE/JULY 2018
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

Q1 Phytochemistry is the study of phytochemicals, which are chemicals derived from plants. It commonly strives to describe the structures of the large number of secondary metabolite compounds found in plants.

(a) Name **FIVE (5)** different classes of secondary metabolite compounds.

(5 marks)

(b) Give **ONE (1)** example of secondary metabolite compound from each class named in **Q1 (a)**.

(5 marks)

(c) Identify the intermediates of biosynthetic pathway of each class of secondary metabolites named in **Q1(a)**.

(5 marks)

(d) Figure **Q1(d)** shows the structure of cocaine. Identify and name the building blocks to form the structure (mark your identification in the given figure and attach with the answer script).

(10 marks)

Q2 Alkaloids are found primarily in plants and are especially common in certain families of flowering plants. More than 3,000 different types of alkaloids have been identified in a total of more than 4,000 plant species.

(a) Define alkaloids.

(4 marks)

(b) By using suitable graphic organizer, classify phytochemicals in Figure **Q2 (b) (i)-(viii)** into the correct group of basic unit classification of alkaloids. Write the name and draw the structure of each determined basic unit.

(21 marks)

Q3 (a) Phenolic compounds can be determined by using different methodologies. Compare and contrast between Folin-Ciocalteau, Acid Butanol Assay and Prussian Blue Assay.

(12 marks)

(b) *Allium sativum* (garlic) contain organosulphur compounds. Basically, there are 2 types of organosulphur compounds; fat soluble and water soluble compounds. Illustrate and discuss the release of water-soluble and fat-soluble of organosulphur compounds in *A. sativum*.

(13 marks)

Q4 Phytochemicals are present in almost all fruits and vegetables as well as in legumes, grains, seeds, nuts, rhizomes and tea.

(a) Elaborate the potential health benefits of the following phytochemicals:
(i) Curcumin
(ii) Isothiocyanates
(iii) Capsaisin
(iv) Piperine

(16 marks)

(b) 'Peria Katak' or Green Bitter Melon (*Momordica charantia*) has been used traditionally to treat diabetes mellitus. Highlight the major phytochemicals which might contribute to the effects and explain the mechanism on how each phytochemicals can act as anti-diabetic agents.

(9 marks)

– END OF QUESTIONS –

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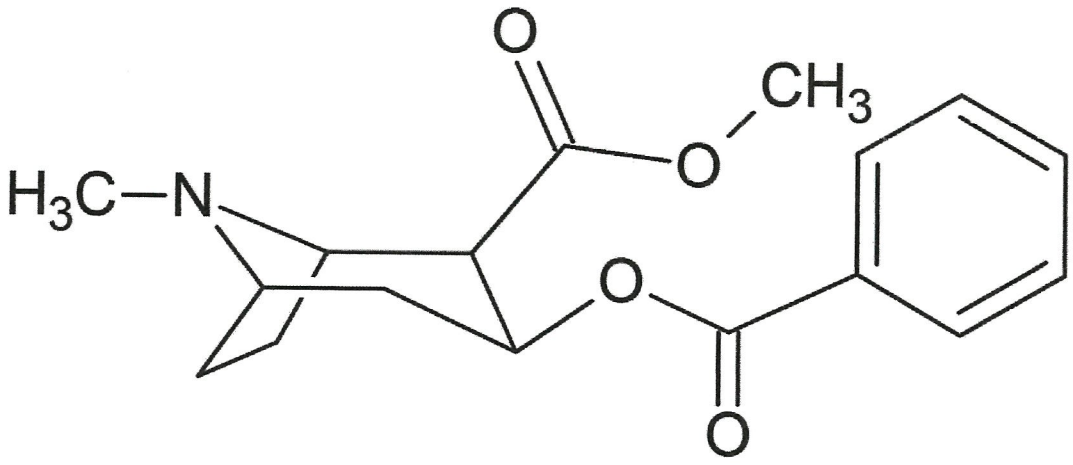

Figure Q1 (d)

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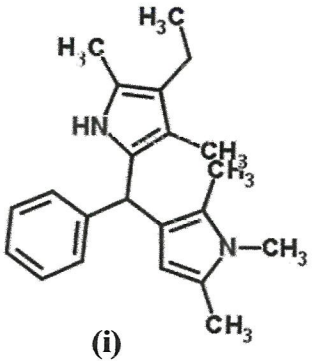

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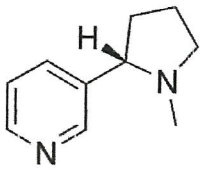

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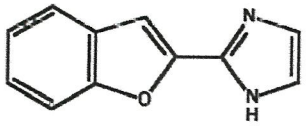

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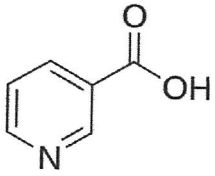

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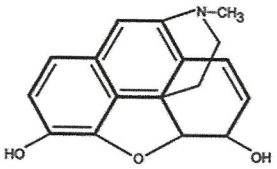

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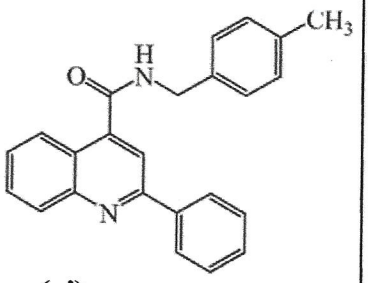

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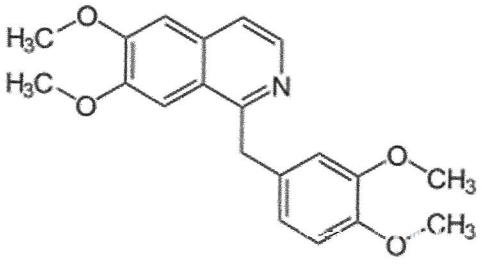

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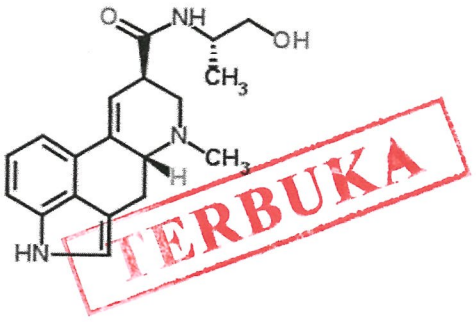

(viii)

Figure Q2 (b)